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| 09/628,397      | 08/01/2000  | Yee S Ng             | 81345JDL            | 5650             |

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Lawrence P Kessler  
NexPress Solutions LLC  
Patent Department  
1447 St. Paul Street  
Rochester, NY 14653-7001

EXAMINER

LEE, TOMMY D

| ART UNIT | PAPER NUMBER |
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2624

DATE MAILED: 01/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/628,397

Applicant(s)

NG ET AL.

Examiner

Thomas D. Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 7 and 8 is/are rejected.
- 7) ☒ Claim(s) 4, 6 and 9 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 and 3. 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Specification***

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claim 8 is rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,088,130 (Matsukubo).

Matsukubo teaches an edge enhancement method for processing image data comprising: processing image data using under color removal and/or gray component replacement (masking UCR unit 109 receiving UCR coefficient; note Fig. 24); and adjusting edge enhancement processing of the image data in according with whether or not under color removal and/or gray component replacement is used or the extent of such use (spatial filter 111 uses two filters for edge emphasis (column 11, lines 35-44); values of color components received from masking UCR unit via  $\gamma$ -collector 110 and

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thus edge enhancement adjusted based, in part, on UCR coefficient received by the masking UCR unit).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,920,646 (Kamon) in view of U.S. Patent 5,703,971 (Asimopoulos et al.).

Regarding claim 1, Kamon teaches an edge enhancement processing system for modifying image data at certain pixel locations to include gray scale image data so as to reduce jaggedness in the image, the system comprising: a threshold device that establishes a current binary pixel value for an incoming current gray level pixel in accordance with a thresholding criterion (gradation processing circuit 19 (column 9, lines 62-67; column 12, lines 42-54)); and an edge enhancement image processing device that examines the current binary pixel and neighboring binary pixels in accordance with predetermined criteria for determining adjustment of the current pixel to a gray scale value to reduce edge jaggedness of the image (pattern memory 106 (column 11, lines 32-50); jagged line correction utilizes multi-value data for smoothing jagged oblique lines (column 13, lines 47-50)).

Kamon does not teach an adjustable threshold device with an operator accessible input to the threshold device for adjusting a threshold value in the

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thresholding criterion. Asimopoulos et al. teach an edge enhancement processing system (column 6, lines 54-59) that provides this feature (threshold calculation module 3, where "t" is set by a user (column 3, lines 50-57)). This provides the advantage of allowing a user to adjust to different background levels, thereby optimizing contrast of images and background, and thus it would have been obvious for one of ordinary skill in the art to modify the teaching of Kamon by providing a threshold calculation module such as taught by Asimopoulos et al.

Regarding claim 2, Kamon teaches an edge enhancement method for processing image data comprising: establishing a current binary pixel for an incoming current gray level pixel in accordance with a thresholding criterion that employs a threshold value (gradation processing circuit 19 (column 9, lines 62-67; column 12, lines 42-54)); examining a current binary pixel and neighboring pixels thereto in accordance with predetermined criteria to determine an adjustment of the current binary pixel to a gray scale value to reduce edge jaggedness of the image (pattern memory 106 (column 11, lines 32-50)); and substituting the gray scale value for the current binary pixel to reduce edge jaggedness of the image (jagged line correction utilizes multi-value data for smoothing jagged oblique lines (column 13, lines 47-50)).

Kamon does not teach a step of determining an adjustable threshold value in a holding criterion in response to an input from an operator. As mentioned above, Asimopoulos et al. teach an edge enhancement processing system (column 6, lines 54-59) that provides this feature (threshold calculation module 3, where "t" is set by a user (column 3, lines 50-57)). This provides the advantage of allowing a user to adjust to

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different background levels, thereby optimizing contrast of images and background, and thus it would have been obvious for one of ordinary skill in the art to modify the teaching of Kamon by providing a threshold calculation module such as taught by Asimopoulos et al.

6. Claims 3, 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamon in view of Asimopoulos et al. as applied to claims 1 and 2, respectively, above, and further in view of U.S. Patent 5,974,171 (Hayashi et al.).

The combined teachings of Kamon and Asimopoulos et al. are not directed to color separation image data that has been subjected to under color removal and/or gray component replacement (claim 3) or a color transformation process (claim 5) before being transformed into a binary pixel. Hayashi et al. teach an edge enhancement method (space filter 233 (Fig. 10) conducts edge enhancement or smoothing (column 9, lines 21-22)) which operates on color separation image data (CCD line sensor outputs RGB data (column 9, lines 2-3)) that has been subjected to under color removal and/or gray component replacement (masking UCR circuit 232 conducts masking and UCR by a matrix operation (column 9, lines 19-21)) and a color transformation process (minimum value extraction circuit 231 extracts minimum value from logarithm-converted CMY data from LOG conversion circuit 230 (column 9, lines 15-19)) before being transformed into a binary pixel (binarization circuit 235 (column 9, lines 24-26)). Since means for processing color image data are well known in the art and allow for the enhancement of edges found in color images as well as non-color images, thereby providing greater versatility, it would have been obvious for one of ordinary skill in the

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art to have modified the combined teachings of Kamon and Asimopoulos et al. by providing means for reading and transforming color images, such as taught by Hayashi et al.

As for claim 7, Asimopoulos et al., as mentioned above regarding claims 1 and 2, teach an adjustable threshold value which is determined in accordance with a selection by the operator (threshold calculation module 3, where "t" is set by a user (column 3, lines 50-57)). Hayashi et al., as mentioned above regarding claims 3 and 5, teach color image processing that includes under color removal and/or gray component replacement (masking UCR circuit 232 conducts masking and UCR by a matrix operation (column 9, lines 19-21)), and since means for processing color image data are well known in the art and allow for the enhancement of edges found in color images as well as non-color images, thereby providing greater versatility, it would have been obvious for one of ordinary skill in the art to have modified the combined teachings of Kamon and Asimopoulos et al. by providing means for reading and transforming color images, such as taught by Hayashi et al.

***Allowable Subject Matter***

7. Claims 4, 6 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: No prior art has been found to teach or suggest "providing operator adjustable modification of the strength of the gray scale value substituted for the current binary

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pixel" as recited in claims 4 and 6, or "wherein the adjustment (referring to adjusting step of claim 8) comprises adjustment of a threshold value used for comparing image data processed by under color removal and/or gray component replacement" as recited in claim 9.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas D. Lee whose telephone number is (703) 305-4870. The examiner can normally be reached on Monday-Friday (7:30-5:00), alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on (703) 308-7452. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.



Thomas D. Lee  
Primary Examiner  
Art Unit 2624

tdl  
January 9, 2004